THE SCIENTIFIC AMERICAN.

THE ADVOCATE OF INDUSTRY AND ENTERPRISE, AND JOURNAL OF MECHANICAL AND OTHER IMPROVEMENTS.

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THE SCIENTIFIC AMERICAN,

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(The Principal Office being at New York,)

BY R. PORTER & CO.

RUFUS PORTER,—Editor.

Each number of this paper is furnished with from two to five ORIGINAL ENGRAVINGS, many of them elegant, and illustrative of NEW INVENTIONS, SCIENTIFIC PRINCIPLES, and CURIOSITIES; and contains as much Interesting Intelligence as six ordinary daily papers, consisting of notices of the progress of Mechanical and other *Scientific Improvements*,—American and Foreign Inventions; Catalogues of American Patents;—Scientific Essays, illustrative of the principles of the Sciences of Mechanics, Chemistry, and Architecture;—Instruction in various Arts and Trades;—curious Philosophical Experiments;—Miscellaneous Intelligence, Poetry, and, occasionally, Music.

This paper is especially entitled to the patronage of Mechanics and Manufacturers, being the only paper in America devoted to the interests of those classes; but is particularly useful to Farmers, as it will not only apprise them of improvements in agricultural implements, but instruct them in various mechanical trades, and guard them against impositions. As a family newspaper, it will convey more useful intelligence to children and young people, than five times its cost in school instruction. Another important argument in favor of this paper, is, that it will be worth two dollars at the end of the year, when the volume is complete, and will probably command that price in cash, if we may judge from the circumstance that old volumes of the "New York Mechanic," by the same editor, will now command double the original cost.

TERMS.—"The Scientific American" will be furnished to subscribers at $2, per annum,—one dollar in advance, and the balance in six months.

Five copies will be sent to one address six months, for four dollars in advance.

Any person procuring two or more subscribers, will be entitled to a commission of twenty-five cents each.

TERMS OF ADVERTISING.—For 10 lines, or less, 50 cents for the first, and 12 1-2 cents for every subsequent insertion.

From the Essex Banner.

King Winter.

Hurrah! for King Winter, his exile is o'er,
And howling in triumph he returns to our shore,
A garland of frost work he sports on his brow,
And jewels of ice in his diadem glow.
He has built up his throne of snow on the hills,
And set his cold signet on fountains and rills.
He's spread his white banners on mountain and plain,
His old withered sceptre he's wielding again.
He has reared a castle of clouds in the sky,
And he pours forth his arrows of hail from on high;
He fastens the hurricanes down to his car,
And rides on and carries his conquest afar;
His court he's convened in some dark northern cave,
Where Zero's breath stings and the tempest sprites rave;
Where Boreas attends his mandates to hear,
And then howl them forth till Earth quivers with fear.
He laugh's at Queen Summer's voluptuous reign,
And vows she has wrought all her fancies in vain.
He tramples her foliage under his feet,
And clothes the forest in a garment of sleet.
The rich man may smile at the king of the storm,
While sitting secure in his own happy home.
For what though his wrath waxes higher and higher,
It blows not on him by his bright glowing fire;
But alas! he bitterly howls at the poor;
With withering curses he enters their door.
He spares not infirmity, childhood or age,
But pinches and stings them alike in his rage.
Ye favored of fortune weighed down by your gold,
Hear the cries of the poor, their anguish behold;
And the surplus of wealth that flows o'er your cup,
Let the sons and daughters of sorrow drink up.

Metrical Grammar.

1. Three little words we often see
Are ARTICLES, *a, an,* and *the.*

2. A NOUN'S the name of any thing,
As *school,* or *garden, hoop,* or *swing.*

3. ADJECTIVES tell the kind of noun,
As *great, small, pretty, white,* or *brown.*

4. Instead of NOUNS, the PRONOUN stand:
John's head, *his* face, *my* arm, *your* hand.

5. VERBS tell of something being done:
To *read, write, count, sing, jump,* or *run.*

6. How things are done, the ADVERBS tell:
As *slowly, quickly, ill,* or *well.*

7. CONJUNCTIONS joins the words together
As men *and* children, wind *or* weather.

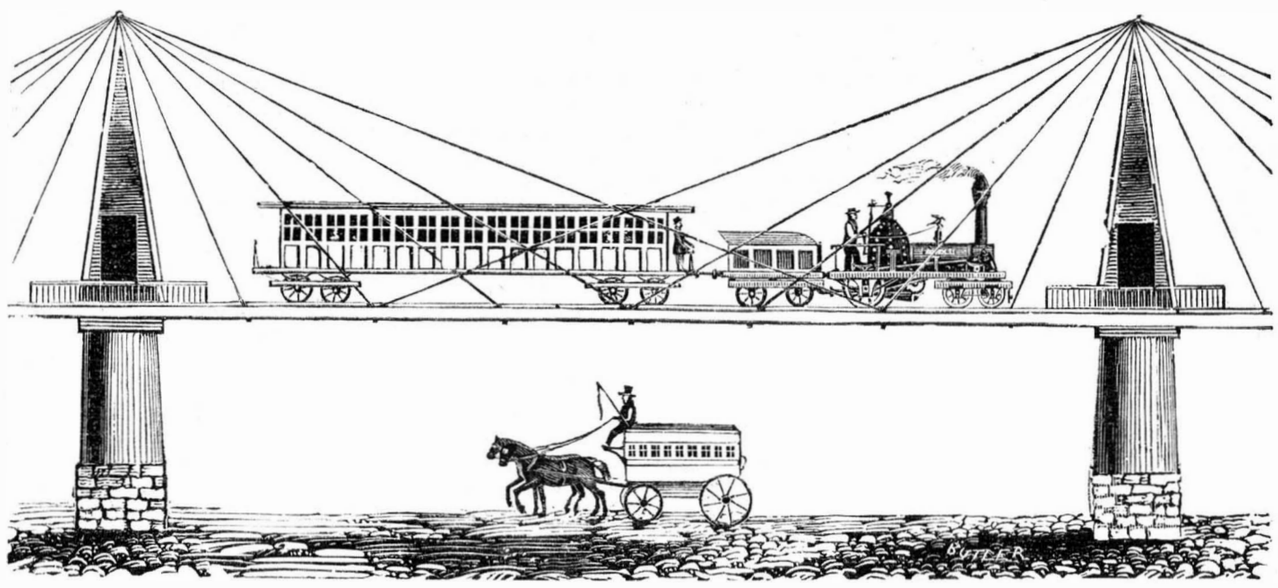
8 PREPOSITION stands before
A noun; as *in* or *through* a door.

9. The INTERJECTION shows surprise:
As *oh!* how pretty, *ah!* how wise.

The whole are called nine PARTS OF SPEECH,
Which *Reading, Writing, Speaking teach.*

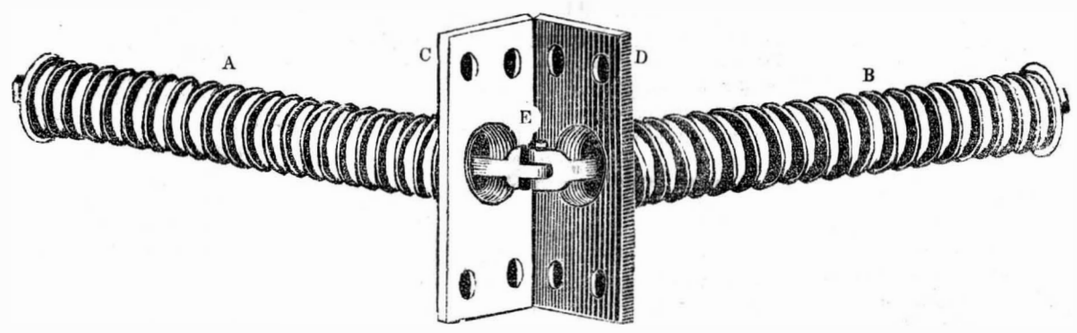
"Say, Jack, are you asleep?" Sam cried,
"Why do you ask?" Jack quick replied.
"Because if not," said Sam,
"I want to borrow half a crown,
To pay a friend I owe in town;"
"Well, then," says Jack, "I am."

BROADWAY ELEVATED RAILROAD.



EXPLANATION, &c.—We have heretofore alluded to the constructing of Elevated Railroads over the centres of some of the principal streets of this city; since which we have more attentively examined the subject, and are fully convinced of the practicability not only of constructing such roads, but of rendering them unobjectionable to the citizens resident on those streets, and those who have occasion to ride, promenade, or pursue the ordinary branches of business therein. This road must consist of a single track—which would not be objectionable, as a train each way, every half hour, would furnish ample accommodation—elevated about eighteen feet from the ground, and supported by a series of stone columns, eight feet in diameter, and sixty feet apart. A frame work of substantial timber is elevated over each column, and about twenty feet high: and from the heads of these frames, several iron wire braces extend in each direction, to several points or sections, thus supporting the road between the columns, as shewn in the engraving. This railroad may thus be made sufficiently permanent and safe, without discommoding the travel or business of the street, or obscuring the light of the houses or shops: for be it understood that this road has no flooring, but consists of open frame-work of timber, on which the rails are laid. The cars, and especially the engines, used on this road will be of light construction, the latter being operated by either a rotary, or other silent engine, that it may work without noise, and also without smoke. Convenient facilities for ascending to, or descending from the railroad, will be erected at every principal crossing. Platforms will be erected at such places, on each side of the road, and surrounded by a railing: and a narrow walk will extend from each platform, to the side of the street, where it may be connected with a flight of stairs, descending to the side-walk; or the columns may be built hollow, and contain a flight of spiral stairs, and one or more doors at the bottom thereof. We are confident that any objection brought up against this plan of erecting and constructing railroads over our principal streets, will be imaginary rather than real; and that by superseding, in a great measure, the noisy and dangerous omnibuses on those streets, these roads will render a residence on such streets, more pleasant and unobjectionable, and that consequently the value of property therein will be enhanced.

ELLIS'S INVISIBLE DOOR SPRING.



EXPLANATION.—The two spiral springs, A B, are attached to the two face plates, C D. These springs are coiled openly, so that their tendency is to expand, or extend outward from the plates, but are restrained by two brass caps at the extremities of the springs. From each of these caps a rivet-jointed chain extends to the plate, and the two chains are connected together by a rivet, E, at the centre, between the two plates. When this apparatus is to be applied to a door, a hole is bored in the edge of the door, large enough to receive one of the spiral springs, which is inserted therein, and the corresponding plate is fastened to the door by four wood-screws; the plate being imbedded in the wood. Another hole is bored in the casing, opposite that in the door, and the other spring is inserted therein and secured by fastening the other plate to the casing. During this process, the two chains remain disconnected with each other: but are then drawn together and connected between the door and the rabbit, by the pivot E. The springs are then invisible, and all that is seen of the apparatus is the two plates, and the small section of chain which appears between them, when the door is open; but when the door is closed, every part of the machinery, even the plates are invisible. These springs have sufficient power to close any door, even against a current of air; but the chains may be readily disconnected when their aid is not wanted. There are various sizes of springs, of different powers; the prices varying from 75 cents, to one dollar and a quarter. They have already come into extensive use, and are highly spoken of by those who have tried them. Altogether considered this spring is a neat and excellent article, and must supersede other kinds in use. They may be obtained at Mr. Seymonr's Hardware Store, No. 4 Chatham Square, as may be seen by his advertisement in another column. A specimen may also be seen at this office.

COPPER MINES IN UPPER CANADA.—Some of the British officers in Canada have lately made an important discovery of some of the richest copper mines in the world. This discovery has created great excitement. Some of the officers, *en route* to England, are now in this city, and will carry with them some specimens of the ore, and among them one piece weighing 2200 pounds. The ore is very rich, yielding, as we learn, 72 per cent. of pure copper. Some of the copper was taken from the bed of a river, and some broken off from a cliff, on the banks—the latter is six feet long, four broad, and six inches thick.

A DOLLAR A FOOT.—It is reported that when the Fresh Pond cars ran off the track, and off the bridge, into the "vasty deep," between Charlestown and Somerville, there happened to be in the cars, among the rest, a jolly Jack Tar; and though he sustained no material injury, the directors offered to pay him for the danger he ran of breaking his neck, if he would say how much it was worth.—"How far did I fall?" inquired Jack. "About twenty-five feet." "Wal, give us twenty-five dollars—a dollar a foot is as much as a man ought to expect—shiver my timbers if it aint."

MATRIMONIAL SQUABBLE.—Vy, said the lady, it a'nt no use belonging to you no how! Vere's the benefit I gets by it? I never has none of your earnings, nor nothen. Vy now, expostulated her mate, vot is it you be arter? Vot does the 'oman vish? Vos'nt you drunk o' Wednesday, corned o' Thursday, drunk o' Friday, and corned again now? Vot would you 'ave? I suppose you vants to be hanged next.

A MENDICANT DOG.—"I was travelling," says M. Blanc, "in the diligence. At the place where we changed horses I saw a good-looking poodle dog, which came to the coach door, and sat up on its hind legs, with the air of one begging for something. 'Give him a sou,' said the postillion to me, 'and you will see what he will do with it.' I threw to him the coin; he picked it up, ran to the baker's and brought back a piece of bread, which he ate.—This dog had belonged to a poor blind man, lately dead; he had no master, and begged alms on his own account."

SAW MILLS IN ST LOUIS, MO.—There are thirteen saw mills in operation, propelling eighteen saws—one running three, three others running two each, and nine each running one saw. These mills according to circumstances, sometimes run day and night, and at other times during the day only. The New Era says a medium day's work for one saw is about two thousand feet of thin stuff—say inch lumber; and for day night about three thousand five hundred feet. At the former figures, the amount sawed per week by all the mills would be 216,000 feet, and according to the latter, 378,000 feet.

SENSIBLE FELLOW.—A gentleman residing in Penn Yan was walking one morning, when he saw his future wife engaged at the duties of the wash-tub. He stopped and looked at her for a moment, and then said, "Kate, will you marry me?" "Yes," was her prompt reply. Within a week they were married. Brief, pointed and business like. Had he found her at the piano, ten chances to one he would have deferred "the question" to a more convenient season.

THE OREGON TRADE—A PEEP INTO THE PACIFIC.—The last intelligence informs us that there are now two packets running between Oregon City and Honolulu, one of the Sandwich Islands. One of these is an American packet, and the other belongs to the Hudson's Bay Company. This fact is the initial of one of the greatest commercial revolutions which the world has seen. Look at the map. Fix your points at Liverpool, Boston, St. Louis, Oregon City and Canton. Then calculate the freight and time required by a bale of goods transported around Cape Horn to Canton. Then take the same bale of goods by steam car from Boston to Oregon City, and then by steam packet from Oregon to Canton. If the goods go from England, by Cape Horn, it will save ten thousand miles to take them across the American continent! If they go from the United States, there is a saving of two-thirds of the whole distance! That the trade of the United States will take that course, provided the communication is by steam, no one can doubt. It is vain to talk about the Panama route if you can go by steam to Oregon.—(Cincinnati Chron.

THE FALL RIVER WORKS.—The Fall River Monitor says:—"The Fall River Iron Works Co., during the past summer, have built another mammoth factory, to run 22,000 spindles. N. & J. Durfee have also erected, during the past season, a large steam mill, to run 10,000 spindles—and the Pocasset Manufacturing Co. have finished an extensive addition to their Quequechan Mill, in which they have this season put 6000 additional spindles—which, together, will about double the number of spindles now running in the factories of this place."

The Life of a Newspaper.

WRITTEN BY ITSELF.

My life is shortly told. My first impression was the sensation of a tremendous but short squeeze, which instantly awoke me into life and thought. I was now spread out to the light, and a glow of intelligence completely pervaded me. My ideas were at first new, multifarious and confused; nations, politics, courts, wars, speeches, merchandize, fighting, feasts, deaths, marriages, ditties, poetry, &c. &c., made up all my thoughts, which were various and mixed. I lay in a silent state of wonder and great amazement. I soon found that I was but one of a very large family, that was ushered into this curious world at the same time. Our whole family was laid in regular order in a pile; my situation—being one of the first born—was particularly uneasy, damp, and uncomfortable. I had a silent, intuitive longing wish to get into the world, which was at last gratified. Morning came, and I was carefully folded and laid, Moses-like, in a basket, by a boy, who was called the carrier, and borne into the street. The said carrier, I soon found, was an object of interest and desire. He was soon accosted by an elderly looking man, with thread-bare, old, and rusty breeches—"Have you a spare paper, this morning, my boy?" "No sir!" was the short reply, and he trudged on with us, muttering, "not as you know on, old gripes—you are the same chap that promised me some coppers for a paper, the other morning, and hain't paid me yet; you are too stingy to take the paper—you won't get another I guess." My brethren were fast leaving me, being deposited at their proper destination. At length my turn came, and I was tucked into the crevice of a shop-door. The first sample of the kind of usage to expect was not at all alluring. I had not been long in my new situation, when a reluctantly early comer, swinging a key in his hand. wistfully eyed me, and, casting a look about him, feloniously seized me, and thrust me into his pocket. My rightful owner—by virtue of advance pay,—being in sight, hailed and arrested the pilferer, and with threats, compelled him to relinquish his prize. He entered his store, and I soon found that I was the great object of his attention. After hastily drying me by the fire, in which process I narrowly escaped conflagration, he ran his eyes upon sales at auction, advertisements, &c. I was then more particularly examined and dismissed with condemnation. "Nothing but foreign news—congress and cabinet—love stories, and accidents by flood and field. A newspaper should be a commercial report; one side at least should be devoted to prices current." I was then pettishly thrown upon the counter, but was soon in requisition. A boy came in with a "please to lend ma your paper a few minutes, just to look at the ship news?" The request was reluctantly granted, with something about the plague of the paper borrowing, and a determination so stop it. The good old woman, whose husband was at sea, eagerly sought the ship news, but was disappointed in her search. "How negligent and careless these printers are," said she, "not a word of intelligence of the Wind Bird; they print of Portland, and poetry, and fill their papers with advertisements, and that is all they care about." Miss now took her turn. She sought the stories, the poetry, and marriages, which in half an hour were all devoured, with the "wonder that they put any thing else in the paper." An elderly lady now took me, who, adjusting her spectacles, surveyed me a little while, and declared me a "terrible uninteresting paper; hardly a column of deaths, and not more than fifteen or twenty murders and accidents." In this way I passed through all the hands of the family, and after being well soiled and somewhat torn by the little ones, was sent home. For three whole days I had no rest, but was continually borrowed and abused. At the end of this period I was supplanted by a new face, and was then discarded and thrown aside, like all servants when they have become useless. I was however again resuscitated, and employed as a wrapper to some merchandize and sent into the country. There, I again became the object of interest, went the round of the neighborhood, and was a "nine days' wonder." I am now quietly hanging up in a shattered condition, in a farmer's kitchen, from which I have written this brief memoir. I have seen much of the world, and learned that mankind are unreasonable and ungrateful, and thai in a world of great variety of taste and wishes it is impossible to please all.

WESTERN MANUFACTURES.—The Nashville Orthopolitan states that in Lawrence county, Tennessee, in five factories of which the names are given, capital to the amount of $43,000 is invested; 86 hands are employed; 665 bales of cotton are consumed, and 485,000 dozen of thread are spun. Two other spinning factories are in process of erection. In the same county there are five iron works, each of which produces 100,000 pounds of iron. The gross amount of iron manufactured in this county is about 90,000 lbs., valued at $36,000. The value of cotton yarns is estimated at $40,000. These factories, says the paper from which we gather these facts, may appear small, but they are the foundation of better things to come.

A VERY SENSIBLE DOG.—We tell so many dog stories that we have some fear that we may "run the thing into the ground," as the saying is, but the fine Newfoundland dog of a gentleman who stopped at one of our hotels not long ago, was a sensible one, and we venture him in print. One morning his master offered him some brandy toddy. Lion was young and inexperienced, and confiding. It was the first temptation, and like many a silly young man, he yielded. The result was that he became much excited, and performed various undogly antics, peculiar to man and brute in that state. The next day the temptation was renewed. Lion put his paw languidly up to his head, as much as to say—"excuse me, if you please—the brandy I drank yesterday gave me a head-ache."

Nashua Telegraph.

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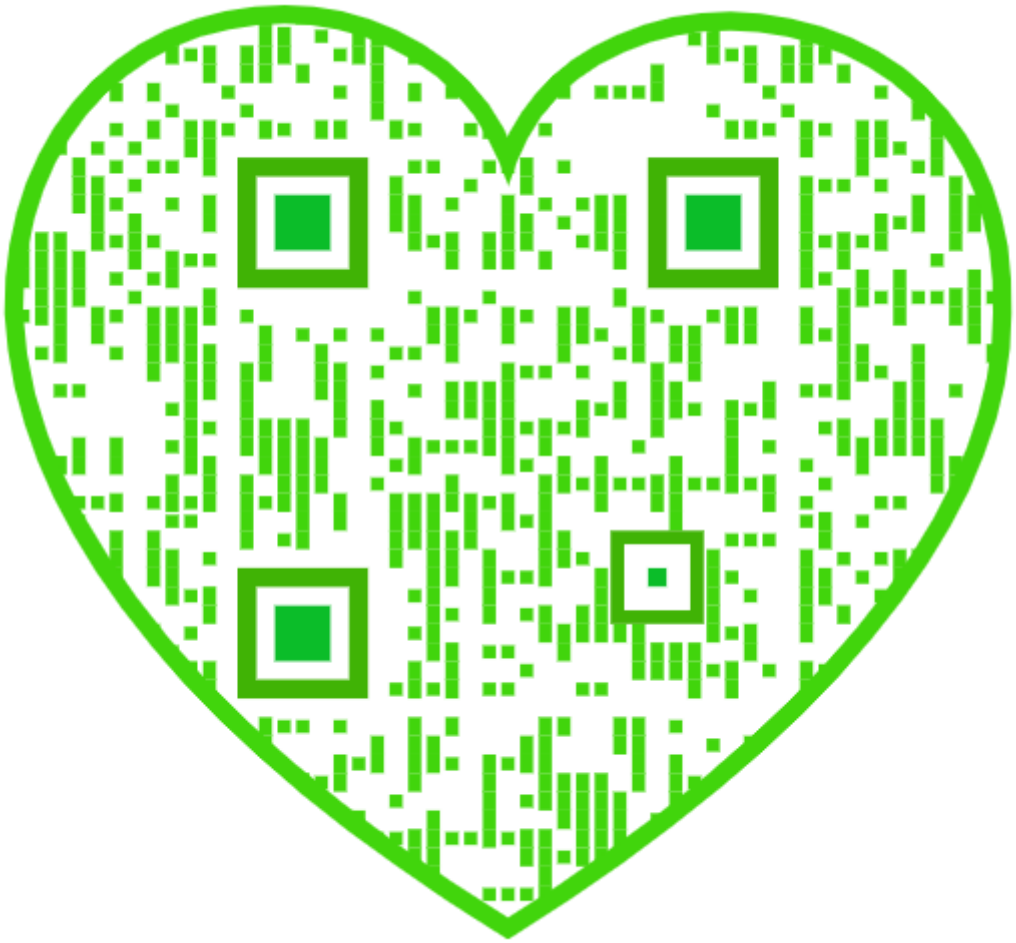
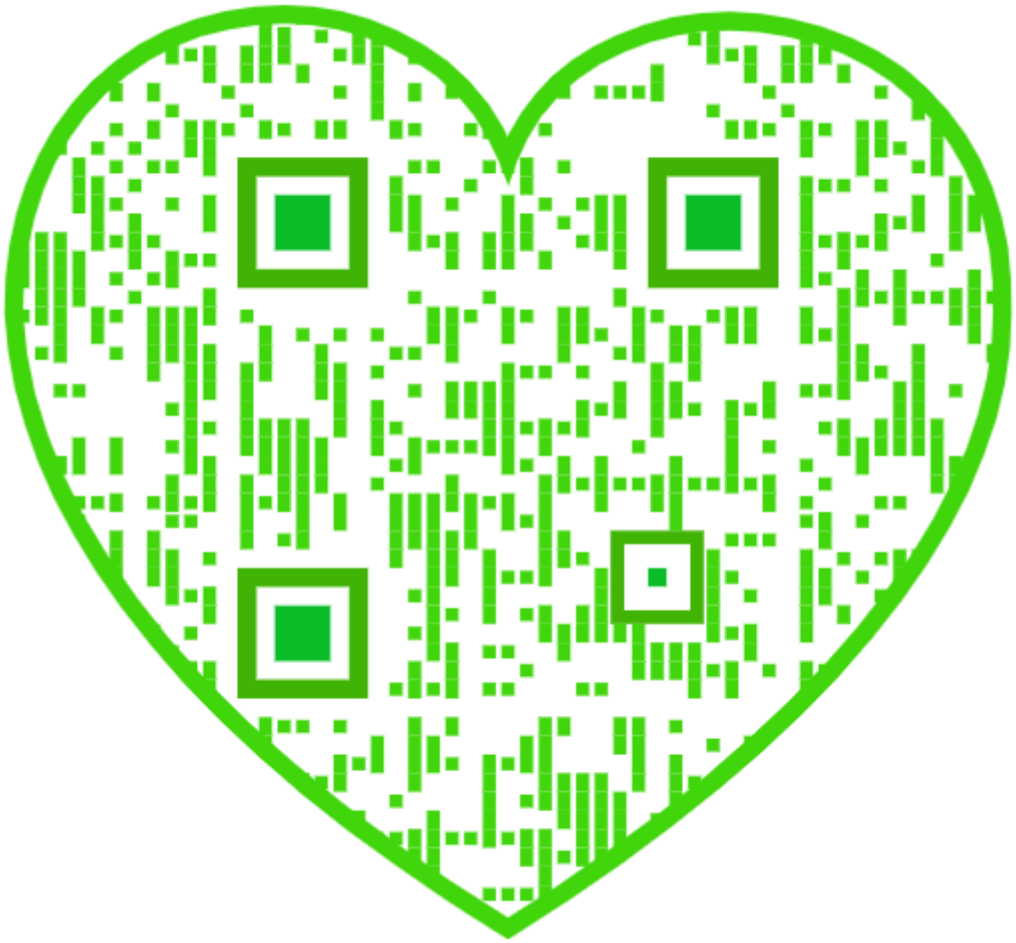




SCIENTIFIC AMERICAN

NEW-YORK, THURSDAY, JANUARY 1.

AGENTS WANTED.—Many travelling and local agents are wanted, to introduce and extend the circulation of this paper, in every principal village in the United States.

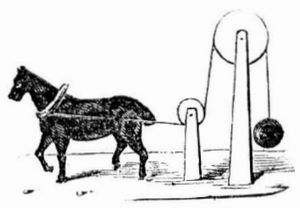
THE SELF-ACTING HELM.—an Electro Magnetic apparatus for steering vessels to any required point of the compass, without any attention from the mariners,—will be presented, with an engraving, in a few weeks.

TO OUR RESPECTED COTEMPORARIES.—We wish to have it distinctly understood, that we promptly send duplicates of this paper to all those who publish. or have published, our advertisement, as it appears at the head of our first column.

HOTELS AND READING-ROOMS.—Being desirous of having this paper more extensively seen or heard of we have decided to furnish it to hotel keepers and reading rooms for one dollar per annum, being half the regular price. If our generous cotemporaries will do us the favor to give a two line notice to this effect, we will acknowledge the favor with true gratitude.

Science of Mechanics.

(Continued from No. 15.)



POWER.—Bolton and Watt, of England, made some experiments, or procured information from those who did, on the strength of the English cart-horses; and finding some which were able to raise 330 lbs. weight, a vertical distance of one hundred feet per minute, this has, for want of some better scale, become the standard of computing the power of steam, water mills, &c. In this country, however, horse-powers have been frequently estimated at 220 lbs., 100 feet per minute. Now we propose a more regular and convenient scale for computing power, and invite all the world to adopt and abide by it, in all cases of computing and describing quantities of power, henceforth. Let the unit of power be considered equal to raising one pound, a vertical distance of one hundred feet in one minute. Let this quantity of power be called a pound of power, which will, with regard to facility of reckoning, correspond with the pound weight. Then we shall have a *fifty power*, a *hundred power*, a *thousand power*, &c. Instead of estimating the power of a steam engine at ten *horse-power*, we should say or write 3300 pr. Instead of a *quarter of a horse-power*, we shall say *eighty-three power*, or write 83 pr. Every machinist will readily see the convenience of this method of computing power, and we hope to see it established by an Act of Congress. In future numbers of this paper, these terms will be uniformly used in designating quantities of power. Having established this point, we shall now proceed to the subject of Hydraulics, and describe the power that may be derived from water-falls and rapids, in streams of various sizes, and under various circumstances.

There is an opinion very prevalent, that a large water-wheel is much more powerful than a small one, with an equal quantity and fall of water, on account of a supposed advantage of leverage by the length of the arms of the wheel: and with this erroneous impression, some have constructed wheels whose diameters were twice as large as the distance of the fall of water; and the wheels being constructed with buckets, similar to those of an overshot wheel, the water has been brought into the buckets at a point about as high as the axle. This theory, however, is very erroneous: for although by the leverage of the long arms, or radius of the wheel, the weight of the water applies more force to the axle or shaft of the wheel, yet as much time and as much water are required to produce one revolution of the wheel, as would produce two revolutions of a wheel of half its diameter. There is, moreover, in this case, a greater proportion of the power lost by a discharge of water from the buckets, prior to their reaching the bottom of the wheel.

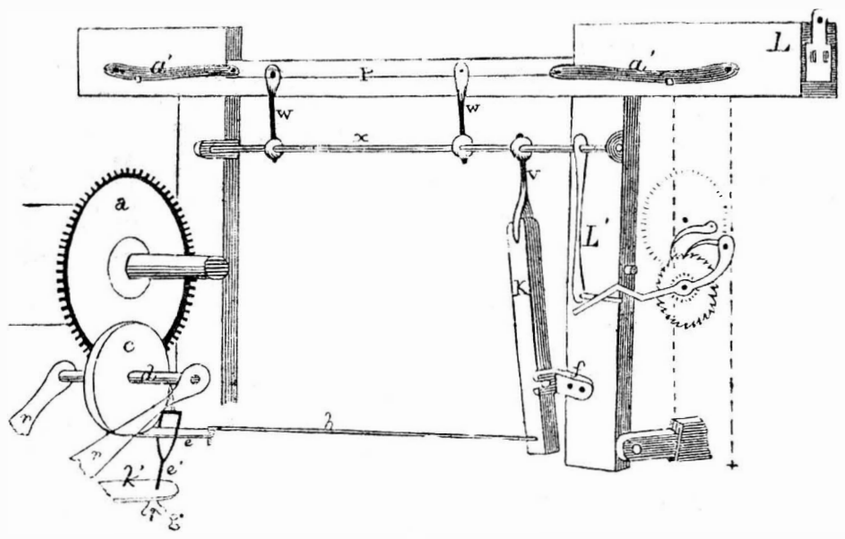
To be continued.

OREGON RAILROAD.—Mr. Whitney, in advocating this project of railroad, says, "The whole Asiatic trade with America will load its cars. Before the last mile of rail is laid, our enterprising Indiamen will be unloading freight for it, in the harbors of the Columbia." We like this style of anticipation, and hesitate not to say, that if the present Congress does not pass some act favorable to the enterprise, it will have planted the seeds of its own stigmatization to ripen earlier than that of the Legislature which refused to countenance the railroad projects of the scientific Oliver Evans.

THE DISTANCE TO OREGON.—The actual distance to be sailed from New York to the mouth of the Columbia River, by the way of Cape Horn, is estimated at 15,000 miles. The distance from New York to the mouth of the Columbia River, by land, is about 3,700 miles. Only 11,300 miles difference.

THE COTTON LOOM.—Nearly 20 years after Arkwright had begun to spin by machinery, the price of a particular sort of cotton yarn, much used in the manufacture of calico in England, was 38s. per lb. The same kind of yarn is now sold for between 3s. and 4s., or one-fifth of its price forty years ago. It is estimated that 400,000,000 yards of English cotton cloth are annually exported, and 400,000,000 used at home consumption.

BRAYTON'S IMPROVEMENT IN LOOMS.



We have received no full description of this improvement; but from the inventor's remarks on the mode of its operation, those who are accustomed to machines of this kind will probably be able to understand wherein the peculiarity consists. It is called the "Let Off and Take Up Motion on Power Looms."

MODE OF OPERATION.—The mode of operating the above motion is to place the motion on the loom, as the cut or figure represents, and then place the stud in the finger, L, on top of the hoppergrass, and have the ketch end of the hoppergrass the heaviest. Use no roller on the sword of the lathe. By lowering the stud in the finger L, will produce less vibration on the reed, and by raising it will produce more. On the let-off or wheel C, have a stiff leather strap with a small iron rod leading from the same to the lever on the sword of the lathe. The thum-screw G is to tighten the strap in order to make the web tight as it may be required. For making fine, even, and heavy goods both motions should be used at the same time.

WILLAM H. BRAYTON.

N. B. All orders for the above motion addressed to MASON & CRAIN, Pawtucket, Mass., will be attended to without delay.

The Art of Painting.

(Continued from No. 15.)

CHRYSTALINE CHANGEABLE PAINTING.—This may be said to be the most brilliant branch, in the entire art of painting, inasmuch as the pictures produced in this line, are more brilliant in appearance than any other. It is seldom seen on any other work, than nicely wrought French fancy boxes, waiters or tea-trays. It can be executed on no other ground than tin-plate, or tinned iron plate, which for nice work, should be smoothly planished; but a practitioner may work on the ordinary tin plate. The crystalizing process is effected by means of acids. Let the plate be perfectly clean, and placed in a horizontal position; then dip a very soft brush in muriatic acid, and wash over the face of the plate with it, and immediately immerse the plate in clear water. Wipe the plate dry, and repeat the process three or four times, and the plate will have acquired a beautiful changeable crystalline appearance. Another process which gives a finer and differently formed crystalline figure, is effected by a mixture of equal parts of sulphuric and muriatic acid, diluted with double the quantity of water. For this process, the plate should be annealled, by being held over a charcoal fire until the tin on the plate begins to melt; but it should become cold again before the acid is applied. A still greater diversity of crystalline figures may be produced, by applying a hot iron to the under side of the plate while in a horizontal position, and moving the hot iron slowly in various directions over the surface of the plate; thus by annealing some parts of the plate while other parts escape, the crystallization, whether produced by the muriatic or mixed acids, will appear differently in differents parts. By a little experimental practice, a learner will be able to produce such an appearance of surface as may suit his taste. Having prepared the ground in this manner, and provided a full variety of transparent colors (heretofore described for painting on glass) and some fine pointed hair pencils, proceed to draw the outlines of the designed picture, on the crystallized ground, observing to lay out the design in such a manner as to accommodate the crystalline figures and shew them to the best advantage. On some parts of this work, opaque colors may be applied but in such a manner that the most important and conspicuous figures, shall present the changeable crystalline appearance, in bright colors and metallic brilliancy. Of course, the lights must be preserved, and the same rules in applying the colors observed as in transparent paintings. Human faces must be painted opaque, unless a sufficient space of the ground may be found of an uniform shade, to accommodate it, in which case the changeability of the countenance, as the position of the picture is varied, will have an interesting effect. Water views, edifices, rocks, flowers, and ladies' dresses, may be worked in the transparencies; and especially forests, if well managed, will have a beautiful effect by their changeability, and resemble the appearance of trees and foliage waving in the wind. Also, waves of the ocean, will appear in motion, as the position of the work, relative to the eye, is changed or varied. The bronzes, gold or silver, may be occasionally applied to this kind of painting; and the whole is to be finished and secured by a smooth coat of copal or seed-lac varnish.

To be continued.

LONG DAYS IN THE UNITED STATES.—It is anticipated by many that our Oregon or Pacific possessions will be extended as far north as the Bomanzoff Mountains, near the 70th parallel, in which latitude the sun does not set in summer. In June it is 25 degrees above the horizon at "midnight," and the only mode of knowing that it is midnight is watching the sun when it begins to ascend. Fowls go to roost at 7 P. M., and repose until the sun is well up. In winter it is of course the reverse, as in the high latitudes the sun is not seen for six weeks.

UNOXYDIZABLE ALLOY.—We find it stated in an exchange paper, that an alloy composed of one part of copper and one part of iron, with eight parts of zinc, being carefully melted together, is hard and tenacious as brass;—will not adhere to metallic moulds;—flows freely and leaves the mould smooth; and, what is best of all, it will never tarnish, even if kept in moist air. If these statements are facts, the discovery must be valuable.

WORTH OF AN "EDITORIAL" COLUMN.—The U. S. Journal, at Washington, says, "We have heard of a broker who stood ready to give an "organ" THIRTY THOUSAND dollars per annum for the use of one half of an editorial column! Let this be granted and he would realize an independent fortune in eighteen months. In five years, with such a power at his command, he would be a second Stephen Girard in point of wealth. A few years ago a broker whom we will call H., for lack of a name, applied to N., an influential editor in the city of New York, to give him the privilege of half a column (editorial) of his paper, for which he offered him twenty thousand dollars a year; the offer was declined. Six months afterwards the broker showed the editor his operations, in stocks, through the columns of another paper which had yielded to his terms, and he (the broker) had made seventy thousand dollars in that short time, by speculating in stocks, with the aid of editorial paragraphs he himself had written.

ENGINEERS IN ENGLAND.—The reports in the English papers of the unprecedented demand for engineers in that country, are nearly incredible. It is stated that the most extravagant sums are paid for engineers,—$50, $60, $75, per day are paid for even common and uncelebrated persons, while such men as Stephenson, Brunel, Locke, and others of eminence, are making their 100 to $125,000 per annum, and it is a favor to get to speak to them for merely a moment or two. Surely the "railway mania" prevails to an alarming extent. But, be it remembered, that such excitements are almost invariably succeeded by the opposite extreme of depression.

MANUFACTORIES IN MARYLAND.—The Maryland Calico Print works, are said to be doing a large business in the manufacture of the "madder prints," of excellent quality. The establishment turns out 24,000 yards daily. We are glad to hear of their prosperity; for we have reasons, yet unexplained, for believing that every manufacturing establishment in the Southern or slave holding States, will either directly or indirectly promote the welfare of the entire American community.

A GREAT INVENTION.—A Cincinnati paper informs us that "they have got an invention in New York," of an improved railroad and cars; the track being two feet wider than usual, and the cars furnished with kitchens and dining rooms, so that there may be no detension for refreshments, &c. It is a pity that so important appendages as *sleeping rooms*, were forgotten; but we think it lucky that the New Yorkers are in a fair way to hear of the invention, such as it is.

WOODEN PAVEMENT.—The Brooklyn Star says that wooden pavements are to be laid down around the Custom House, and recommends that the assistance of Mr. James Prince should be obtained to "*ironize*" the wood. We have no doubt that wood paving will yet come into extensive use, when the scientific branch of of preparation becomes more familiar.

DANGEROUS FEAT.—A man at Pittsburg, a few days since, went over the new Monongahela Suspension Bridge, the timbers of which are placed six feet apart, without planking. Of course he had to leap from one timber to another, and in case of a misstep, he must have been precipitated near forty feet to the water below, and in spite of his *feet*, the *feat* would have been de-*feated*.

GREAT FIRE IN COLUMBUS, GA.—On the 21st inst., at about 12 o'clock at night, a fire broke out on the upper part of Broad street, and spread them to Oglethorp, Randolph, and Bryan streets. We have seen no statement of the number of houses destroyed, but the entire loss is estimated at $150,000.

THE WEATHER IN OHIO.—They have had very cold weather in Cleveland, O., the thermometer 20th inst., marking six degrees below zero. Ice made very rapidly on the lake, extending out as far as the eye could reach, and the harbor was firmly closed to the mouth of the river.

ENTERPRISE.—The New Orleans Tropic set up the President's Message on board the steamboat, bringing it from Mobile, having had their cases and hands on board for that purpose.

Preservation of Wood.

Wooden pavements, which were at one time in high favor, on account of the comfort thereby contributed to the ears of men and the feet of horses, have been abandoned on account of their want of durability, notwithstanding the repeated publication and demonstration of the ready practicability of rendering the wood durable as stone, and that by a cheap and simple process. The unqualified abandonment of this excellent improvement, was one of the many consequences of the election to official stations, men whose only knowledge or skill consisted in politicul intrigue, devoted to the obtaining and retaining of office, but comparatively regardless of the convenience of the public. The recent introduction of wooden rails for railroads, has revived the subject of the preservation of wood, particularly for that purpose; and it is more than likely that wooden pavements will yet come into extensive use under more judicious management, than accompanied their first introduction. Various modes of the preparation of wooden blocks for durability, have been successfully practised, and wood thus prepared has stood the test of many years. For this purpose, nothing more is required than to saturate it thoroughly with a strong saline solution. Let a strong box or cylinder be made, large enough to contain two or three hundred middling sized blocks. Let a pipe communication be made between the interior of this vessel and that of a common steam-boiler. Let the boiler be filled, or nearly filled with water, fully saturated with ten parts of common salt, to one part of sulphate of copper or salt-petre. Then, having filled the first vessel with the blocks, and closed it, heat the water in the boiler, and throw a current of the steam thereof into the steam-box, containing the blocks, till the air is expelled therefrom; then shut off the current of steam, till that in the box shall have time to condense, thus producing a vacuum, when the air will escape from the pores of the blocks, by its own expansive force. Then fill the interstices within the box, with the hot solution, which will instantly fill the distended pores of the blocks, and effectually fortify them against decay during the next succeeding century. The residue of the water may be soon returned to the boiler, and kept in readiness to pickle another lot of blocks, as soon as they may be placed and secured within the steam-box. By a similar apparatus and process, pieces of timber of any length and size may be rendered permanently durable, at a very insignificant expense, and may, in consequence, be applied to various purposes for which it has been heretofore considered inapplicable.

Isthmus of Panama.

A correspondent of the Journal of Commerce states, on the authority of a letter from an Englishman, whose position makes him acquainted with the views of the Ministry, that the English Government has determined, with the consent of New Grenada, to undertake the construction of a ship canal across the Isthmus of Panama, and to convert the most important post an American Gibraltar. It is very possible that this report may be true, and that the Isthmus of Panama is the most favorable point for effecting a ship canal to unite the two oceans; but that the English Government will monopolise the trade between the Atlantic and Pacific shores is altogether out of the question. It must be perfectly clear to every one who is acquainted with the construction and management of canals, railroads, and vessels, that the plan proposed and illustrated in our last number, for transporting vessels over land, is decidedly preferable in all points to the tedious process of canal transportation, especially where there is a considerable unavoidable elevation. The distance from shore to shore at one point, is represented to be only about thirty miles. But the country is mountainous, and would require many locks in passing the heights; and as a canal must evidently run circuitously, the entire length thereof would probably be fifty miles. There may, in all probability, be found better ground for a ship-railroad, by admitting an increase of distance. Even 200 feet elevation per mile, would be by no means insurmountable for a railroad; and when a ship-car is in motion, the additional distance of twenty or even fifty miles, will be of little consequence on the scale of time or convenience. Twelve miles per hour will be a moderate speed for a ship on a railroad, and the time occupied in receiving or discharging it, will not exceed 25 minutes; whereas the average progress on a canal, including the time occupied in passing the locks, could not exceed two miles per hour. On the scale of the first cost, the railroad would have a decided advantage; and were this subject properly laid before our capitalists, there would be found little difficulty in forming a company that would take measures to procure the requisite surveys of the country, and eventually, and without much delay, establish a railroad which would enrich the proprietors, while it would furnish important facilities to the commerce of the world. Should our proposed plan of a ship railroad, meet the eye of any person who may think it an object to raise the means of putting forward the enterprise, we shall allow him a liberal interest in the right of the invention.

AN AGREEABLE SURPRISE.—A prisoner arrived at Baltimore on Wednesday week, from Hagerstown, convicted of larceny and sentenced to be confined for a term of years in the Penitentiary, was most agreeably surprised upon finding himself preceded by a pardon from the Executive of State.

DISTILLERIES.—There are in the United States upwards of 16,000 distilleries, which are capable of, producing, annually, as is estimated, 41,000,000 gallons of distilled liquors, 500,000 assaults and batteries, 100,000 thefts, 800 suicides, and about 100 murders. Surely the distillers may be said to be great producers.

AWFUL.—An Irish servant girl was requested by a lady to go to a dry-goods-store and obtain "a bed-comforter" for her. About an hour afterwards she returned with one of the clerks. Of course the lady fainted.

VARIETY

The Chinese manufacture sheet lead for lining their tea chests, by pouring small quantities of melted lead on a flat surface of polished stone and placing another stone upon it, thus spreading it out to a thin sheet. Of course the stones must be moderately heated.

"When it freezes and blows, take care of your nose, that it doesn't get froze, and wrap up your toes in warm woollen hose."

The above, we suppose, was written in prose, by some one who knows, the effect of cold snows.

Fourteen hundred and ninety-nine—as well call it 1500,—houses have been erected in Baltimore during the past season. This looks decidedly prosperous for that city.

Somebody hints that it would be a work of charity for Gen. Taylor to seize the Mexican army, and clothe them. Perhaps the General has no clothes to spare.

A Massachusetts physician writes to a correspondent in Rhode Island, that an *alarming* state of health prevails at present in his neighborhood.—What can the poor fellow do?

Family *jars*, although often deprecated by sensitive and tasteful husbands, are said to be excellent *preserve*-atives of domestic *sweets*. Who took that *kiver* off?

The census of Chicago, for the present year, shows a population of 12,088. This is a wonderful increase for a place whose foundation dates but a few years back.

Some of the large steamers on the western lakes are said to have cleared $26,000 each, during the past season. Several new ones have been commenced, and will be ready to commence running next spring.

Carter, the lion tamer, is said to have a little dog about half the size of a man's fist, which he carries in his bosom, so adjusted that his head answers for a breast-pin.

Somebody says—but nobody believes it,—that a South Carolina judge has decided that bowing three times to a girl is equivalent to an engagement of marriage. Boys must look out.

An opponent of our present tariff, in Washington, quotes from an English writer in support of his argument. That puts the boot on t'other leg entirely: we do not want a tariff to please the English.

Why didn't you go to Cork to-day, Paddy? Because, sure, an' wasn't it meself that heard a gentleman say that there was to be an eclipse of the moon here this evening: so I stopped to see it.

Where a house is well furnished with books and newspapers, the children are usually intelligent and well informed; but if there are no books or papers, the children are ignorant if not profligate.

The number of bones in the frame-work of a human body, is 260. Each hand and each foot contains 27. It is indeed a wonder that such a complicated machine is kept in repairs so long.

General Tom Thumb has *not* been run away with by the European gypsies; but is displaying himself boldly at Lyons, and is soon expected to return to New York.

Of 285 students at the Medical Institute at Louisville, Ky., more than two hundred of them have signed the temperance pledge. We are not assured that they are all teetotallers, however.

A cartman in Baltimore returned from England in the Acadia with the proceeds of a large estate which has been left him. He can promote himself now to a carriage.

The railroad fare between Springfield and Northampton, Mass., a distance of about 25 miles, has been established at fifty cents. This will ensure the prosperity of the road.

About five hundred of the Sac and Fox tribe of Indians passed through Independence, Mo., a few days since, on their way to the lands assigned them by Government.

The Planet Venus may now be seen at mid-day in clear weather, a few degrees north of the sun's path, and about fifteen degrees east of the sun. Step out and see it.

In Peora, Ill., a tax of fifty dollars per annum is assessed on every liquor shop: or in other words, the liquor dealers pay that sum for the *privilege* of ruining their neighbors.

It is reported that a large manufactory of railroad iron is to be established at South Boston, with all requisite facilities for extensive business.

The income of the Empress of Russia is said to be $1,900 per day: enough to keep her busy at shopping, every pleasant afternoon in the year.

We have received nearly a hundred copies of the President's Message, via our exchange papers, and they have not done coming yet,——nor yet.

The Charleston (S.C.) Patriot states that a pond at that place was frozen over on the night of the 20th inst. It was very good ice, what there was of it.

Miss Bremer says, that to make people virtuous, we should do more and preach less—make men happy, and they will be good of themselves.

A large public meeting was held at Chillicothe, Ohio, lately to adopt measures for the introduction of manufactures into that city.

An elderly gentleman being dangerously sick was advised to send for a physician, but declined, because, as he said he wished to die a natural death.

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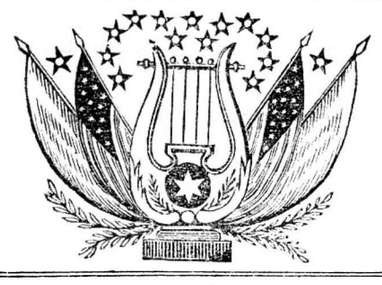


(Original.)

Autobiography of a Gold Ring.

'Neath the dark heaving wave of the ocean I rest,
Quietly musing alone,
Yet remember the scenes that before me have passed,
E'en down to the time when away I was cast,
In solitude ever to mourn.

When Charley first came to the jeweller's shop,
To laugh the hours away,
He entered the door with a skip and a hop,
With a bright flashing eye, but the bow of a fop,
And he called for a gold ring gay.

Some dozens were handed, and I too was there,
Making quite a display.
A jewel he sought for the hand of his fair;
He pondered, and called for a gem the most rare,—
And, d'ye see, I was purchased that day.

Away then he went, with his heart full of love;
"And, Clara, my charmer," says he,
"I swear to thee, sweet one, by Venus above,
That I'll ever be true, as the fond turtle dove,
And in pledge, I this ring give to thee."

She looked at me, then, with a coquettish smile,
And, laughing, to Charley replied:
"Do you think, with a ring, sir, my heart to beguile
Yet the bauble is pretty—I'll wear it a while,
When weary, I'll throw it aside.

"Do so," said the lover, and snatching a kiss,
He reluctantly hurried away,
For the voice of Mamma was heard calling for miss;
And had she then found them, that moment of bliss
Might have caused quite a sorrowful day.

Of the scenes that I witnessed no more will I say,
Except that the courtship progressed,
In spite of mamma, Clara carried the day—
And they were to wed, in the bright month of May,
Were ever two lovers more blessed?

The time for the wedding had nearly arrived,
When, wofully sad to relate,
By some means or other, Disorder contrived
To sever the bond——both the lovers survived,
But, I know nothing more of their fate.

For Clara removed from her delicate hand,
The ring that her Charley had given,
Returned it—and he, then, as I understand,
Condemned me to lie 'neath the wave, on the sand,
That I ne'er might repeat tales—of even.

ELDA.

The Dying Girl's Request.

I'm dying, Mother—let me lay
This throbbing head upon your breast,
And ere my spirit soars away
To those bright mansions of the blest,
Sing me the song I used to love,
Which oft you sung in days of yore;
For ere I seek my home above,
I'd hear those melting strains once more!

I used to sit upon your knee
And gaze into your loving eye,
While sweetly you would talk to me
Of a bright world beyond the sky:
You told me JESUS' home was there,
And that he loved your daughter well;
Then you would kneel with me in prayer,
While tear drops from your eye lids fell.

And when we rose you sung that song,
I almost held my breath to hear;
It bore my raptured soul along
Up to a brighter, purer sphere;
And when you stooped to kiss my cheek,
My little heart was full of bliss,
So very full I could not speak,
To thank you for your sweet, sweet kiss.

I thank you now, my Mother dear,
For all your tender love and care;
The hour of death is drawing near,
And I would once more kneel in prayer.
Sweet Mother, thanks that thou didst tell
Thy daughter of a Savior's love.
And when I bid earth's scenes farewell,
I know he'll guide me safe above.

I'm dying, Mother—let me lay
This throbbing head upon your breast,
And ere my spirt soars away
To seek its everlasting rest,
O! sing to me that soothing song,
The song I loved in days of yore;
For ere I meet yon angel throng,
I'd catch those melting strains once more!

BEST JOKE OF THE SEASON.—The Mexican Society for uniting the North American Republics, met in the city of Mexico, last month, and passed the following resolution:—

"*Resolved*, That the annexation of the United States of North America to the United States of Mexico, is to be the great national event of the year 1846."

Any way you please, gentlemen: you may take us into your Union, or we will take you into ours. *Sun.*

TO THICKEN THE HAIR.—Take of Palma Christi oil, one ounce and a half; oil of lavender, half a drachm. Apply every morning and evening.—*Bost. Trav.*

For the benefit of those who have not got any "Palma Christi," we would state that molasses is just as good.—*Alb. Knick.*

Putty, mixed with a little soft soap, will be found quite equal to either.

AS GOOD AS HIS WORD.—"You told me, neighbor Twist, when I paid Tim Doolittle in advance, on his promising to work for me in haying time, that I should find him *as good as his word*." "To be sure I did, for I always knew his *word* was good for nothing."

Curious Arts.

LACQUER FOR BRASS.—Dissolve one ounce of seedlac, and half an ounce of stick-lac in a quart of the best alcohol. For this purpose, the seed-lac should be first pulverized, and being well mixed with the alcohol, the whole, including the stick-lac, may be put into a flask or glass bottle, and suspended near a fire, or set on a stove where it will be kept warm, for 24 hours, during which time it may be occasionally shaken, or stirred up with a rod. Afterward the solution may be strained through a close flannel, when it will be ready for use. The stick-lac may be omitted, unless an orange tinge is required; or a little of the tincture of red saunders may be substituted in place of it. When this is applied, the work must be warmed as much as the hand can bear, and the lacquer is to be quickly laid on, with a camel-hair brush.

TO GIVE TIN THE WHITENESS AND BRILLIANCY OF SILVER.—To an ounce of nitric acid, diluted with an equal quantity of water, add nearly one ounce of mercury, or as much as the acid will dissolve. When this is dissolved, add to the solution gradually, half an ounce of sulphuric acid; this will precipitate the mercury in the form of a white powder; when this has subsided, pour off the acid and add clear water; thus wash the powder from the acid, then pour off the water, and while the precipitate is moist, (or if it be suffered to dry, it may be again moistened with water,) rub it over the tin with a piece of glove leather. Then wash the tin with water, and when it is dry, rub it pretty hard with a piece of fine woollen cloth; it will resemble polished silver.

THE TRUE PRINCIPLE OF STOVES.—In order to procure the greatest quantity of heat, in proportion to the quantity of fuel consumed, a stove should present a large quantity of vertical surface to the surrounding air, and that surface should be smooth for the purpose of facilitating the ascent of a current of rarified air. If any projection impedes this current the heat accumulates and remains comparatively stationary, and thus prevents the free radiation of heat from within; but when there is a brisk circulation of air outside, the heat as it passes through the iron surface, is instantly carried off, and is circulated in the room; thus allowing the free radiation of more. Every stove for heating, should be made at least six feet high; but if not, the smoke and hot air should be conducted upward, six or more feet, and again brought down within three feet of the floor, before passing off to the chimney. Atmospheric air should always be excluded from the interior of a stove, except so much as is requisite to produce the required quantity of heat; by admitting too much air a rapid current is produced within and the emanating heat is driven into the chimney before it has time to radiate through the iron plate; and in most of the stoves now in use, more than two-thirds of the heat, which might otherwise be useful, is totally lost.

DESPICABLE GENEROSITY—There are frequent instances reported of the immensely liberal or generous donations or bequests of those who find themselves *compelled* to quit possession of their hoarded wealth. Of this sort of liberality, we have lately noticed that of a late resident of this city, who bequeathed $500,000 to a Baptist Bible Society, and $50,000 to each of two sisters, who were until then, at *service* in Brooklyn. Another has given $500 to the Parish of Christ Church of Springfield; and a third, a late resident of New Orleans, has given among other bequests, $100,000 for the establishment of a Free School. In the former instance, the rich man had suffered the two sisters to labor, without even giving them enough to relieve them from hard service, as long as he could hold his grasp of his sordid wealth; but then, to shew his love of religion, he could give hundreds of thousands to a christian society. The latter, was nearly a hundred years old, and notwithstand the numerous instances of poverty and suffering which he must have witnessed, he continued to hug his riches till the approach of death, and then—O yes, *then*—he could very well afford to liberate his slaves, relieve his poor relatives, and give $100,000 to a school. Now it appears to us, that it would be a much more wise and rational course, for the possessors of wealth, to secure a judicious and benevolent appropriation of their money, under their own superintendence, and while they could witness, and rejoice in the salutary effects thereby produced, than to leave that best part of their privileges to others.

CHEAP RAILROADS.—A writer in the Portland Advertiser recommends a light rail path, with a hand car, to connect towns or villages out of the direct route, with the principal railroads. It is sufficiently evident that branch roads for the accommodation of passengers only, might be made with little expense, and passenger cars for such branches, of sufficient strength for this purpose, might be lightly constructed. But we could not readily approve of the application of hand power as a motive, while it appears evident that a steam engine equal in power to twenty men, may be furnished for $300, and not exceed four common men in weight. Roads for such traffic might be constructed in many places for less than $1000 per mile.

GEOMETRICAL.—The following problems have been sent us by a correspondent. If any of our readers will send us the answers, with the demonstrations thereof, we will give them the credit.

1. "If the hypothenuse of a right-angled triangle be 35, the side of a square inserted in it, with a right-angle of the square in the right angle of the triangle, be 12; what are the lengths of the other sides of the triangle?

2. "If a globe, 20 inches in diameter, be perforated by a cylinder 18 inches in diameter, the axis of the latter passing through the center of the former; what part of the solidity at the surface of the globe will be cut away by the cylinder?

3. "At what height above this earth must a man be placed to see one-third the surface of its sphere, supposing of course, that distance has no effect on his powers of vision? A.H.G

Galvanism.

(Continued from No. 15.)

[We shall proceed no farther on the subject of electro-plating, until we have explained the first principles of the application of galvanism to other branches; after which we shall introduce more nice and difficult apparatus and process in the various branches.]

ELECTRO-MAGNETISM.—Magnetism, in general, is well known to constitute, in iron and other metals, a peculiar property of attraction and repulsion, and a tendency to point towards the north and south poles of the earth. Whatever analogy or connection there may exist between Magnetism and Electricity, we shall not at present explain, further than to shew that Galvanic Electricity, under certain circumstances, is capable of inducing magnetism more powerful in its effects than that of any permanent magnet. If a short piece of iron wire be laid across the copper wire, through which a current of the galvanic fluid is passing, the iron will instantly become magnetic, and will attract iron filings, or other articles of iron or steel that may be placed near it, and will also evince polarity, by its attraction or repulsion of the points of a magnetic needle. In this case, if the iron wire be placed horizontally crossing the upper side of the conducting wire, the end or point which projects to the right, relative to the direction of the current, will become the north pole of the wire, and will attract the south pole, or repel the north pole of a magnetic needle, while the opposite end will attract the north, and repel the south poles: (for it may be here remarked that the poles of all magnetic needles uniformly repel the corresponding poles, while they attract the opposite poles of other needles.) But if the iron wire crosses the conductor on the under side, then the end projecting to the left, becomes the north pole thereof. This is termed *magnetic induction*. If the conducting wire be coiled in a spiral form, like a corkscrew or spiral spring, and a small round bar of soft iron be extended through the centre of the coil, the bar will instantly become powerfully magnetic, and the attraction of its poles will be sufficient to suspend iron keys or other small pieces of iron.

This coil is denominated a *helix;* and it is by means of modifications of the helix, that the various phenomena of electro-magnetism, and magneto-electricity are produced. The conducting wire used for this purpose, is usually of small copper-wire, say 1-20 of an inch in diameter, and insulated by being wound with cotton thread, and painted over that with green or other color, ground in shellac varnish. Helices generally consist of several tiers or layers of coiled wire, one over another, and sometimes consist of several hundred feet of wire thus coiled. The bar of soft iron placed in the centre of a helix, is called a bar-magnet; but a more powerful magnet, and one which is more generally used, on account of convenience, as well as strength, is the U magnet, (frequently called the horse-shoe magnet) which consists of a bar-magnet, bent in the form of a staple, so that the two end sections of the bar—comprising the whole bar except a small portion of its centre,—are parallel to each other, and generally about one inch apart. The two arms of this magnet, being each enclosed in a helix, or helical coil of the insulated copper wire, and a current of galvanic fluid being made to pass through the helices,—they forming a part of the circuit of a battery,—this magnet will be found capable of much greater magnetic power, than any permanent steel magnet, and may be made to hold suspended a hundred lbs. weight, by its magnetic attraction. But this magnetic property is so perfectly dependent on the galvanic current, that the moment the conducting wire is disconnected from either pole of the battery, or parted in any other place, the attractive property ceases, and whatever was held suspended, will fall. Every magnet is usually furnished with an armature, which ordinarily consists of a short square bar of iron, corresponding in diameter with that of the magnet, and long enough to extend across two ends or poles thereof. Sometimes, however, the armature is made in a curved form, the two ends meeting those of the magnet, and being fitted thereto. We have now approached that point of the science of Galvanism, in which the electro-magnetic telegraph is situated, and which we shall illustrate in our next number.

To be continued.

NEW MAP OF IRELAND—We have seldom seen a more beautiful and richly colored map, than one recently got up by Haven & Emerson, No. 3 Broad street, representing the "Emerald Isle" in all its glory, and which are sold at the astonishing low prices of $1,50 to $6,00 per dozen. Ireland is truly an interesting country, and we should suppose that every man who sees these maps would buy one.

A beautiful map of the city of New York, Brooklyn, Jersey City, and Williamsburg, published by B. Phelps, of this city, has also recently appeared.

THE ENGINEER'S AND MECHANIC'S COMPANION, by J. M. Scribner, A. M.,—is a work which should be in the hands of every practical mechanic. It treats on the subjects of Arithmetic, Mensuration, Engineering, Strength of Materials, Pneumatics, Friction, &c., and contains a variety of useful tables,—the whole constituting a volume of 250 pages, which is sold at the low price of $1,12, by the publishers, Huntington & Savage, 216 Pearl st.

QUITE LUCKY.—Thomas Parsons, who was a lessee of one of the flouring mills recently destroyed by fire, at Rochester, held a policy of insurance of $5000 upon his stock of flour and wheat which expired the next day after the fire.

WONDERFUL.—The statement is passing the rounds that "all the ships in the world might be placed on the Atlantic ocean, and yet so far apart that no one could see another." The writer was [illegible] aware that ships have no eyes to see with except dead eyes.

Communication.

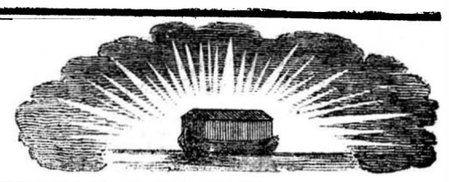
(We are requested to say that our Washington correspondence is from a private gentleman, and not officially from the Patent Office Department.)

WASHINGTON, Dec. 18.

MY DEAR SIR—The present affairs of our nation with foreign powers, will no doubt render the use of heavy ordnance indispensably necessary, in the defence of our national rights. Permit me, therefore, to offer a few facts, as well as a few suggestions, on the subject of the manufacture of heavy ordnance, both wrought and cast: much capital having been invested and expended in this branch of our national defence, as well as some of the most valuable lives lost, through the imperfections, either in the manufacture of heavy guns, or in the material used for that purpose. It will be found very advantageous to have cannon of large calibre, for the purpose of throwing shells with as much accuracy as solid shot are from cannon, and thus enabling shells to do much execution; shells for this purpose being required 10 or 12 inches in diameter. Long guns for this sized shot or shells, are liable to burst on the first trial, and not to stand the required proof, generally used to test them. It is to the manufacture of large cast iron cannon that I wish to call the attention of those concerned. In the first place, cannon of a large calibre are found to burst easier than those of a smaller calibre, where the preparations are fully carried out:—for instance, a nine-pounder cannon stood the test of 17 lbs. of powder, 6 shot, and one wad, (which filled it full,) while many of the 8 inch, or 64 pounder cannon, burst with 20 lbs of powder and two shot, or 25 lbs. of powder, one shot, and two wads; the latter containing more than three times the quantity of metal, and both guns being the same length. A 42 pounder gun will stand the test of 25 lbs of powder, two shot, and two wads; and the 12 inch or 256 pounder guns, will scarcely bare the test of 25 lbs. of powder, and one shot; which goes to show that very large cannon are subject to a heavy strain, besides the strain occasioned by proving them; and this strain is caused by casting the gun solid, and boring it afterward. All metals will expand while heating, and shrink while cooling: thus we see, that the surface of cannon cannot shrink, on account of their being cast solid. The outside is required to shrink much more than the centre, which does not shrink at all, and the result is, that the boring out a chamber in the piece thus cast, of 10 or 12 inches in diameter, takes out all the metal that is subject to no strain at all, while the outside is subject to a strain of several thousand pounds; and this tendency to shrink acts in conjunction with the powder, which causes it to burst. To cast such a vast bulk of metal, hollow, as is required for guns of this size, seems almost an impossibility. If we use sand for a core, and subject it to the heat of melted iron, it would melt to glass, and could not be bored or rimmed out. A clay core could not be suspended sufficient to keep its proper place; and even should it be so suspended and secured, as not to move, it would be otherwise objectionable by not letting the steam or air escape, and the casting might be subject to air holes, and not be solid; and another great objection is, that it would burn to brick, as hard as flint, or to cinders. I can conceive of only one way to cast heavy guns hollows, and that is by making a hollow pipe sufficiently strong to bear the test, and two inches less in diameter than the required diameter of the bore or chamber of the gun, and perforated full of small holes, and shut up at the bottom or lower end, while the other is left open. Around this pipe should be a coating of half or five-eights of an inch in thickness, of black lead, well glazed on the outside; and said pipe should be some six or eight feet longer than the intended gun, for the purpose of securing and suspending it in the mould. When fully prepared for use, it must be secured in the proper position in the mould, which stands perpendicular, and far enough from the bottom of the mould, to leave sufficient strength of metal, beyond the chamber of the gun, for the breach after rimming. Cannon cast in this manner would have a full opportunity to shrink, leaving the metal subject to no strain whatever. They will cool more equally, and while cooling will shrink and compress the black lead, pressing it through the perforated holes in said pipe,—which, being hollow, will also admit of all gas, air, &c., to escape, while the black lead will pass to the interior. The said pipe must of necessity be of wrought iron: and should it be found impossible to get the said pipe out, by working, &c., it can be rimmed out, which would be much better, than to have a gun of the same weight, but of not more than half the strength. I find that a great mistake, as to proper cannon-augers, or rimmers, prevail throughout all cannon foundries; viz.: it appears that in boring, one drill-pointed tool is first used, whereby the first hole is made when the gun is solid; this is very well, but it is the rimmers or finishers that I have reference to. Most machinists use four cutting points; an odd number should be used, and placed at an angle of fifteen or twenty degrees; this will enable the auger, or rimmer, to work more freely. Let the original hole be any shape, only a little smaller, and you will have the bore of the gun as it should be, perfectly round, and straight, without any difficulty whatever. As to the utility of wrought iron cannon, and their manufacture, I will hereafter treat upon that subject; also the utility of percussion shells, &c.

Yours, &c. W.H.W.

GEOMETRY.—We last week published a notice of Scholfield's Elementary and Higher Geometry, recently published by Messrs. Collins, Brother & Co., referring to its contents, &c., since which time we have seen some very favorable recommendations of the work, from sources which are entitled to credit; from which, and from our own opportunity of examining the work, we are disposed to regard it as a production of more than ordinary merit, and would be glad to see it adopted not only in our seminaries of learning, but also in the hands of every mechanic. The work is designed not only as a theoretical, but also as a practical exposition of the subject of Geometry; which is a subject to which every mechanic ought to devote some attention.



The Science of Religion.

We are aware—because some have so intimated—that there are many who are averse to seeing any thing on the subject of religion, in this paper, because it is professedly devoted to the advancement of the arts and sciences, and the interest of mechanics. But this sentiment not only carries with it the idea that mechanics have no regard for religion, but plainly evinces that such objectors do not like religious subjects in any paper, nor any where except at a distance. But we have different views, and consider a correct apprehension of the Author of the works of Creation and Providence, as the *highest point* of Science: and that this can be attained only through the light of the Christian religion. We advocate the progress of science and improvement: and this progress consists in the dissipation of the darkness and errors of tradition, prejudice and superstition, and in the introduction of new discoveries of facilities in increasing and securing the welfare and happiness of mankind. The Divine Creator, after establishing the order and course of Nature, left man to discover by observation and the exercise of his reasoning faculties, the perfect fluidity and buoyant power of water and air, the force of gravity, the expansive effects of heat, and the utility of iron and other metals. And the power and facilities furnished by these discoveries, are now extensively employed in the promulgation of the light of science thus acquired, together with a variety of invaluable *revealed* intelligence, concerning the Author and origin of these materials, and laws of Nature, which have been thus explored and made available. These scientific discoveries have been the means of bringing to our knowledge the glorious truth, that our life is not limited to the duration of the earthly materials of our present bodies; but that, by a right improvement of our abilities, we may advance to a high degree of perfection and felicity of eternal duration. And this truth is not only abundantly confirmed by the advance of science; but the approaches to, and the attainment of that high and happy state, are known to be on the most perfect scientific principles. Any man who, in the scientific pursuits of business, aims at anything short of this, is like a student who goes to college for the honor or pleasure thereof, without regard to the acquisition of an education. The established laws of Nature, with regard to cause and effect, are so constituted, that the happiness of every man is effectually promoted, by his endeavors to advance that of others, and by obeying other precepts of the gospel. The man who neglects these things because he does not see their direct tendency to his own benefit, is as unwise and censurable as an apprentice boy, who neglets to follow his master's instructions in some scientific branch, because he does not fully comprehend the nature and utility of of the process. All things in nature, terrestrial or celestial, belong to a system of scientific mechanism; and the only safe way for us short-sighted mortals, is to obey orders, and trust the result to the glorious and Divine Author.

Faith.

An individual, well known to us, while standing in Fulton street the other day, was asked by a poor famishing, ill-clad man, for relief. He said he had applied to the poor authorities in vain, and unless he got relief from some source very soon, he knew not what must become of him. The appeal reached the heart of the individual addressed, and would have reached his pocket, but, alas! it happened that it was just then empty. He bid the poor fellow wait a few minutes, and he would try to raise a small sum from individuals he was acquainted with in the neighborhood. He went, and after obtaining a few shillings, was returning, when he met a noble-hearted fellow, to whom he said,—"Mr. S., I want a shilling or two from you for a poor fellow dying, almost, from want." Mr. S. searched his pockets for some time, and at length said—"Upon my word, I have not a cent about me. I am sorry." The other turned to go away, but was called back by S. saying—"Hold; I have found something—if it will be of any use to you, take it." "But," replied the other, "this is a $2 bill. I cannot take it. I only wanted a quarter from you, at most." "Take it along," was the reply, "and don't keep the poor fellow standing there famishing. It will get him something comfortable. The individual departed with the money, but before he had got twenty yards returned, and said:—"Mr. S., I cannot take it. I know you have many calls, and turn none away, and this seems like robbery. I cannot take it."—"There you stand," replied Mr. S., "and perhaps the poor fellow has had neither bit nor sup to-day. You and I have had plenty; take it along. I shall be repaid five-fold for what I have given." "But," said the individual, as he stood with the bill in his outstretched hand—"I would rather—" "Pshaw! don't I tell you I shall receive five-fold for that; you know what the good book says,—go and make the poor fellow happy, for a short time at least." The individual was about to express his doubts, and urge him to receive back the money, when a third person stepped up and said, "Mr. S., I have owed you $10 for a long time, but until within one hour have not been able to pay you. I have unexpectedly received the amount of an old bill, and the first thing afterwards was to find and pay you." Mr. S. took the money, and he who paid it departed. The individual who still held the $2 in his hand, looked on in astonishment as he saw Mr. S. receive just five-fold, as he had predicted—as though it was a matter of course. "What are you looking so astonished for?" said Mr. S., pleasantly. "Didn't I tell you I should receive five-fold? I knew it. If I had not stopped to talk with you, the man would not have found me and the money would have been spent, doubtless, before to-morrow. Now go; don't keep the poor fellow out of his money any longer; and mind, always rely on what the good book says."—*Brooklyn Daily Adv.*

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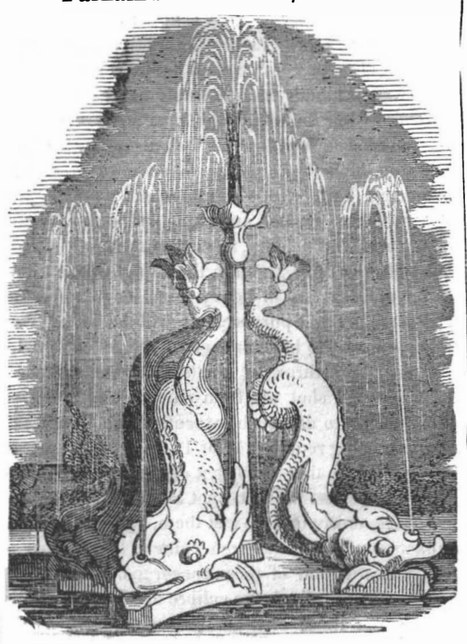

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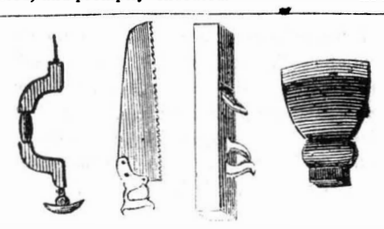

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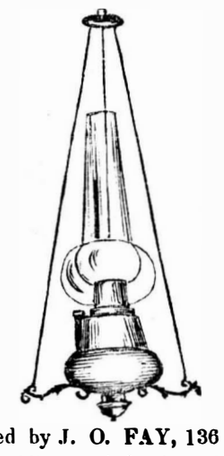

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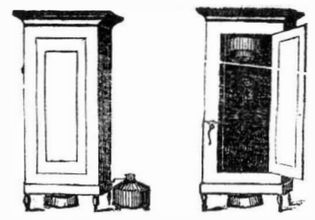

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